QUBIG

Empowering Laser Technologies

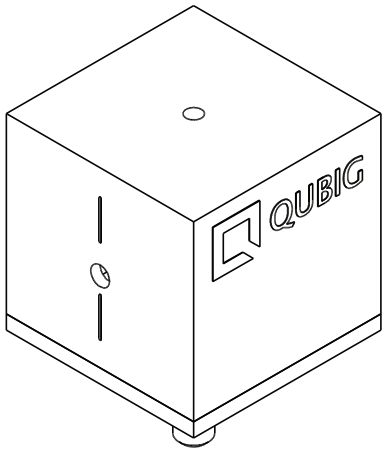
Test Data Sheet

EO-K39M3
S/N:

High-Q, resonant electro-optic phase modulator

with

- tunable resonance frequency



RF properties	Value	Unit
Resonance frequency: f_0 [1]	367 - 491	MHz
Preset frequency: f_{set} [1]	469	MHz
Bandwidth: $\Delta\nu$	2.55	MHz
Quality factor: Q	184	
Required RF power for 1rad @ 767nm [2]	25.9	dBm
max. RF power: RF_{max} [3]	1	W

Optical properties		
EO crystal	MLN	
Aperture	3x3	mm^2
Wavefront distortion (633nm)	$\lambda/4$	nm
max. optical intensity (767nm)	<10	W/mm^2
AR coating (R<0.5%)	500 - 1100	nm

[1] at 24.3°C [2] with 50Ω termination [3] no damage with RF_{in} < 2W

Measured modulation

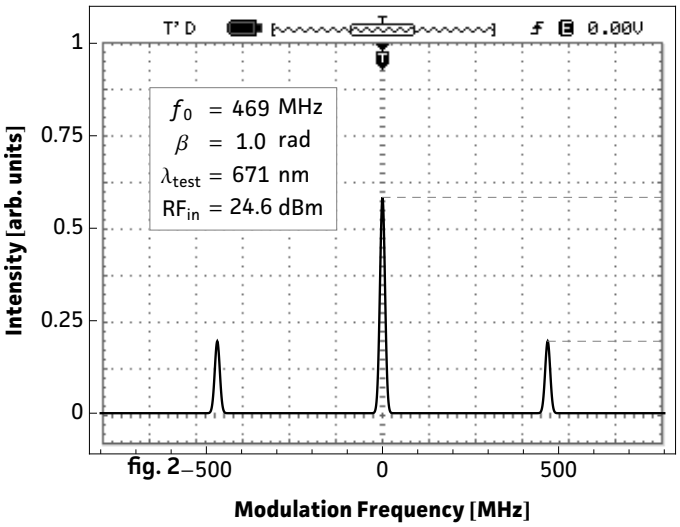
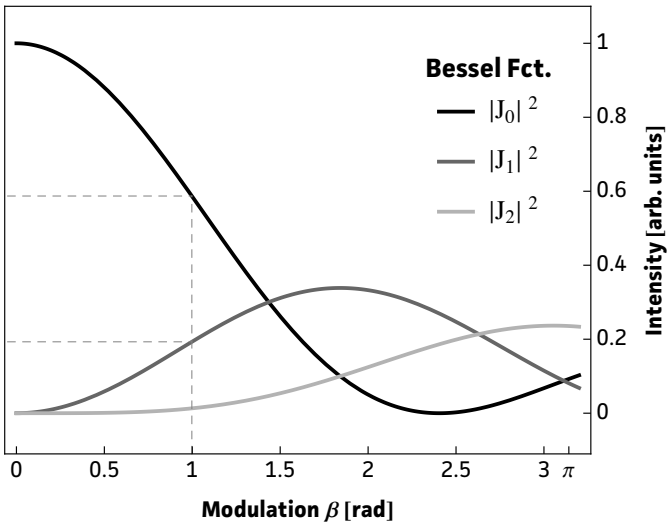


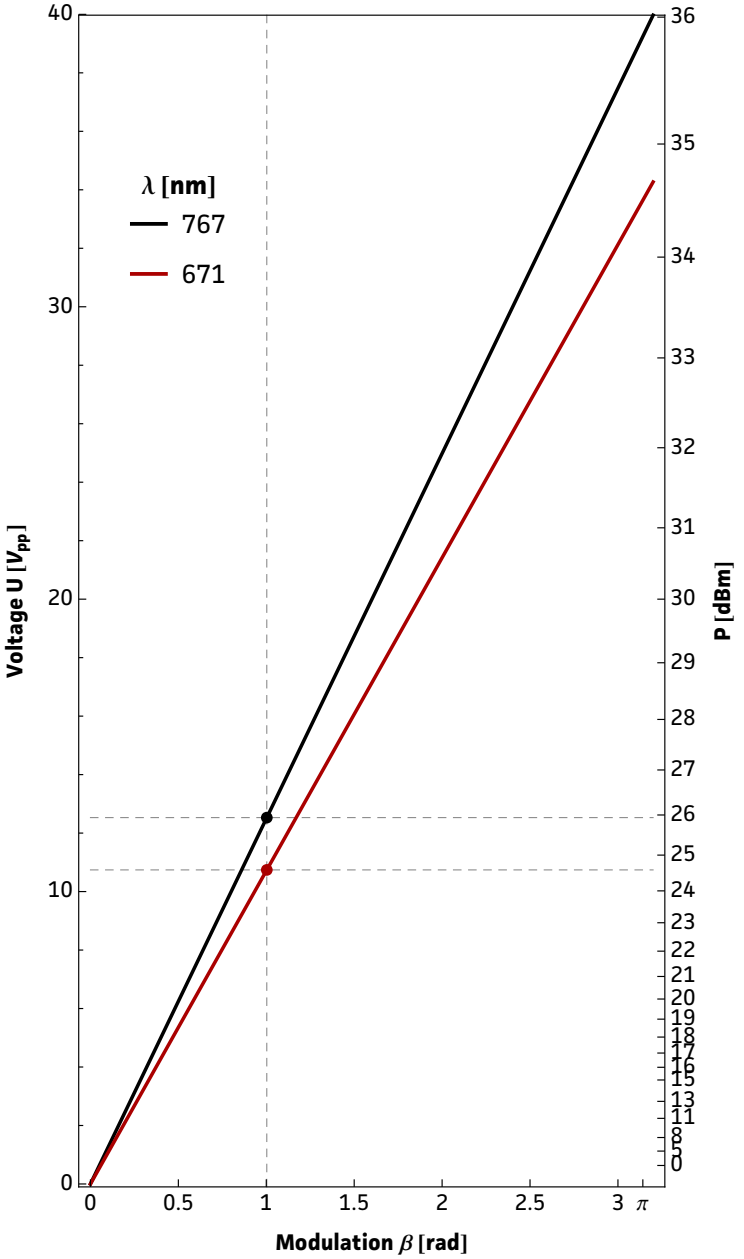
fig. 2



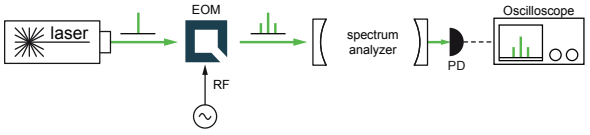
Expected modulation

Wavelength	λ_{use}	767	nm
Resonance frequency	f_0	469	MHz
Modulation	β	1.0	rad
RF power	U	12.5	V_{pp}
	P_{dBm}	25.9	dBm
	P_W	390	mW
	U_π	39.2	V_{pp}
Modulation efficiency	β/U	0.08	rad/V

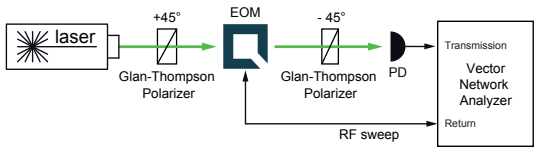
Note: After turn on, the resonance frequency might drift slightly with applied rf power. Please compensate by tuning the rf drive frequency until steady-state.

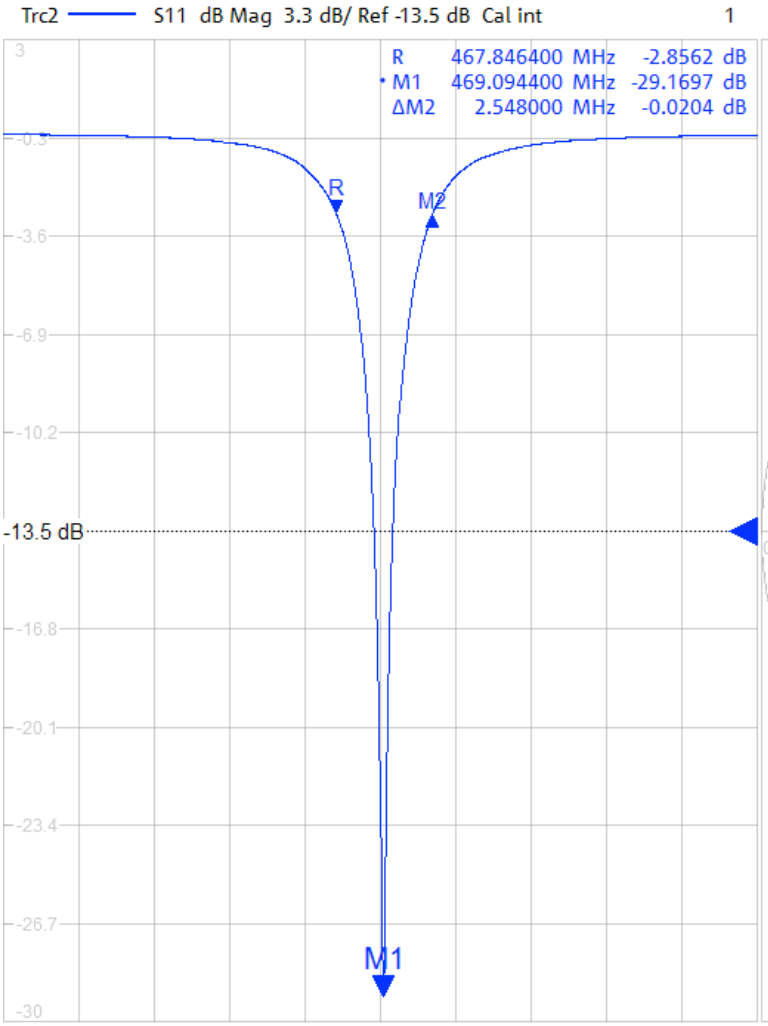


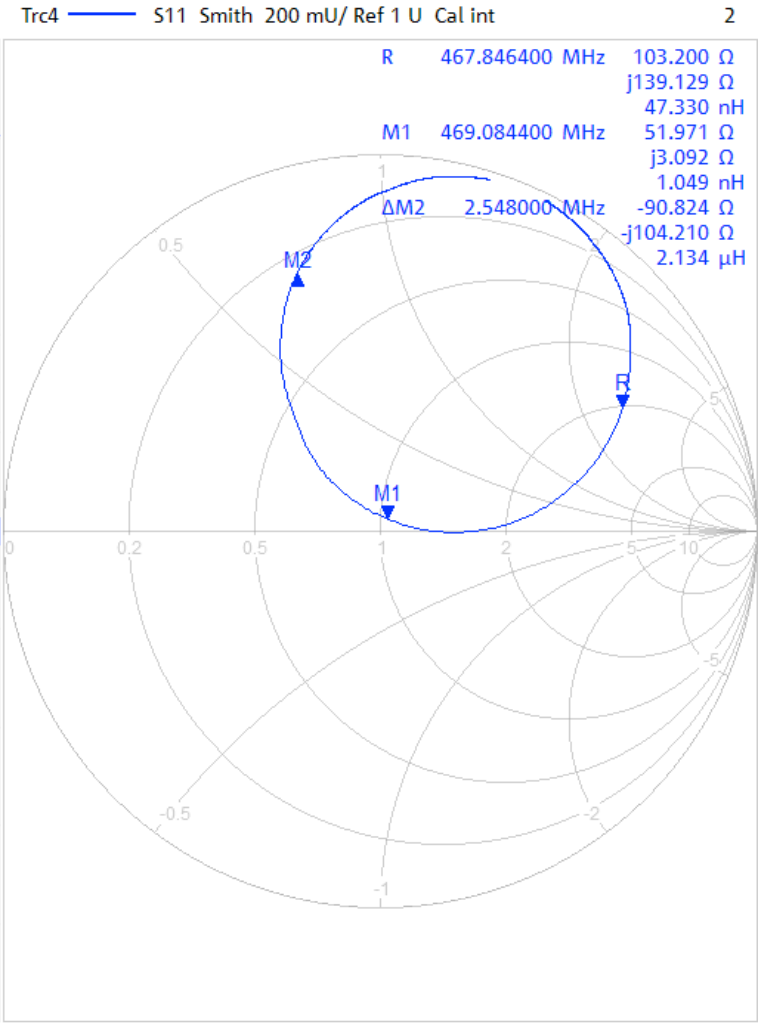
Test setup



Resonance characteristics





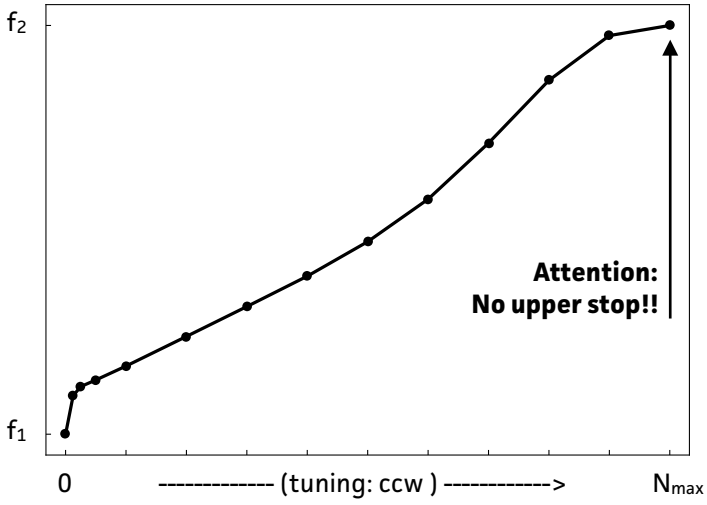


Tuning performance

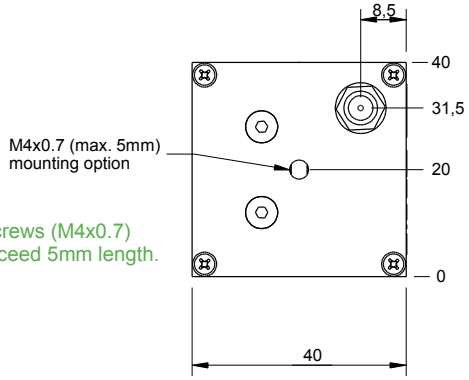
f_0 min | max*	f_1 | f_2	367 | 491	MHz
max. number of turns	N_{max}	12	turns
incr. frequency shift	Δf	~ 11	MHz / turn
tuning orientation		ccw	f_0 ↑

Attention!!

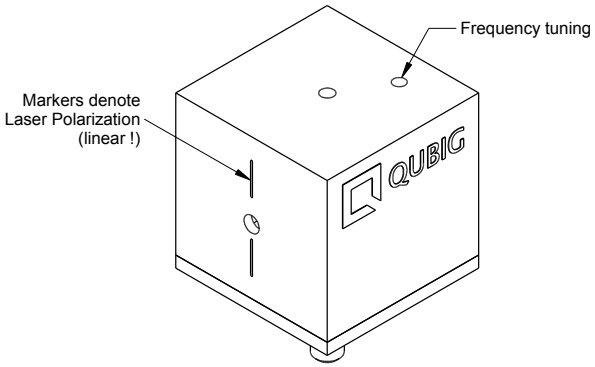
- use only supplied tuning tool
- actuate tuner carefully
- do not apply too much pressure or torque
- keep tuning tool coaxial
- tuner might not be perfectly orthogonal to box

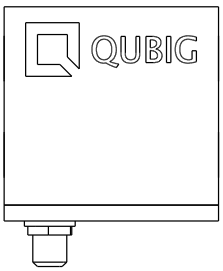


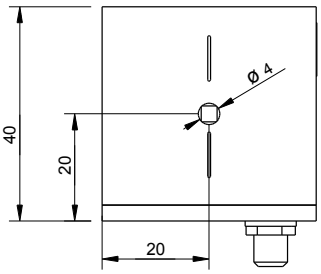
Package drawing

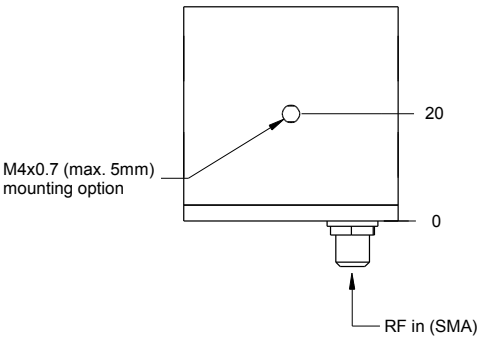


Note 1: mounting screws (M4x0.7) must not exceed 5mm length.

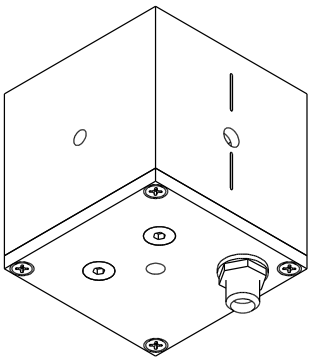


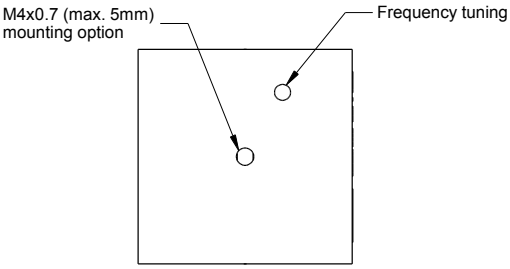






Note 2: crystal aperture is 3x3mm.





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Tested by:

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